

CLAIMS

What is claimed is:

1. A transponder in a wireless electromagnetic tracking system, said
transponder including:
 - 5 a coil for transmitting a signal in a wireless electromagnetic tracking system; and
a rectifying device connected in parallel with said coil.
 2. The transponder of claim 1 wherein said rectifying device is a diode.
 - 10 3. The transponder of claim 1 further including a capacitor connected in
parallel with said coil.
 4. The transponder of claim 1 further including a switch connected in series
with said rectifying device.
 - 15 5. The transponder of claim 3 further including a switch connected in series
with said rectifying device or said capacitor.
 6. The transponder of claim 4 further including a controller for controlling
20 the operation of said switch.

7. The transponder of claim 5 further including a controller for controlling the operation of said switch.

8. A method for tracking a transponder in a wireless electromagnetic tracking system comprising:

receiving a first signal at a coil in a transponder in a wireless electromagnetic tracking system; and

rectifying said first signal with a diode connected in parallel with said coil.

9. The method of claim 8 further including the step of transmitting a second signal from said coil.

10. The method of claim 8 further including varying the capacitance of said transponder with a capacitor connected in parallel with said coil.

11. The method of claim 10 further including the step of operating a switch connected in series with said diode or said capacitor.

12. The method of claim 11 further including controlling the operation of said switch with a controller.

13. A transponder in a wireless electromagnetic tracking system, said
transponder consisting of:

a core for transmitting a signal in a wireless electromagnetic tracking system;
a coil wrapped around said core; and
5 a diode connected to said coil.

14. The transponder of claim 13 further consisting of a capacitor connected to
said coil.

10 15. A method for tracking a transponder in a wireless electromagnetic tracking
system comprising:

receiving a first signal at a transponder in a wireless electromagnetic tracking
system, wherein said first signal is received at a first frequency;

transmitting a second signal from said transponder, wherein said second signal
15 contains a second frequency.

16. The method of claim 15 further comprising the step of rectifying said first
signal with a diode.

20 17. The method of claim 15 further comprising the step of rectifying said first
signal with only one diode.

18. The method of claim 15 further comprising the step of identifying said transponder based upon said second frequency.

19. The method of claim 15 further comprising the step of varying the capacitance of said transponder, wherein said change in capacitance changes said second frequency.

20. The method of claim 19 further comprising the step of identifying said transponder based upon said second frequency.

21. A method for transmitting data in a wireless electromagnetic tracking system comprising:

transmitting a signal from a transponder in a wireless electromagnetic tracking system, wherein said signal contains at least a first frequency and a second frequency.

varying at least said second frequency to produce a variation in at least said second frequency; and

encoding data in said signal based upon said variation in at least said second frequency.

22. A method for tracking a transponder in a wireless electromagnetic tracking system comprising:

receiving a first signal at a transponder in a wireless electromagnetic tracking system, wherein said first signal is received at a first frequency;

5 transmitting a second signal from said transponder, wherein said second signal includes said first frequency and a second frequency.

23. The method of claim 22 further comprising the step of rectifying said first signal with a diode.

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24. The method of claim 22 further comprising the step of rectifying said first signal with only one diode.

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25. The method of claim 22 further comprising the step of identifying said transponder based upon said second frequency.

26. The method of claim 22 further comprising the step of varying the capacitance of said transponder, wherein said change in capacitance changes said second frequency.

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27. The method of claim 26 further comprising the step of identifying said transponder based upon said second frequency.

28. A transponder in a wireless electromagnetic tracking system, said
transponder including:

a coil for transmitting a signal in a wireless electromagnetic tracking system; and
a switching device connected in parallel with said coil.

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29. The transponder of claim 28 wherein said switching device is a switching
diode.

30. The transponder of claim 28 wherein said switching device is a
10 synchronous rectifier.

31. The transponder of claim 28 wherein said switching device is a transistor.

32. The transponder of claim 28 further including a capacitor connected in
15 parallel with said coil.

33. The transponder of claim 32 further including a switch connected in series
with said capacitor.

20 34. The transponder of claim 33 further including a controller for controlling
the operation of said switch.